

## CLAIMS

[Claim 1] A decoding apparatus that performs decoding computations on a window of a predetermined size in parallel in a plurality of processing systems, comprising:

5 a forward probability computing section that sequentially computes a forward probability at a current time point from the forward probability at an earlier time point by the number of the plurality of processing systems in the window;

10 a backward probability computing section that sequentially computes a backward probability at a current time point from the backward probability at a later time point by the number of the plurality of processing systems in the window; and

15 a likelihood computing section that computes likelihood information using the forward probability and the backward probability.

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[Claim 2] The decoding apparatus according to claim 1, wherein the backward probability computing section computes the backward probability at the current time point using data at a later time point than the window as training data.

[Claim 3] The decoding apparatus according to claim 2,

wherein the backward probability computing section uses common training data in the plurality of processing systems.

- 5 [Claim 4] A base station apparatus having the decoding apparatus according to claim 1.

[Claim 5] A mobile station apparatus having the decoding apparatus according to claim 1.

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[Claim 6] A decoding method to perform decoding computations on a window of a predetermined size in parallel in a plurality of processing systems, comprising the steps of:

- 15 sequentially computing a backward probability at a current time point from the backward probability at a later time point by the number of the plurality of processing systems in the window;

- 20 sequentially computing a forward probability at a current time point from the forward probability at an earlier time point by the number of the plurality of processing systems in the window; and

- 25 computing likelihood information using the forward probability and the backward probability whenever the forward probability is computed.